

In the Claims

1-52. (Canceled)

53. (Currently Amended) ~~The solar cell of claim 52~~ A solar cell, comprising:
a substrate;
a conductive film disposed on a surface of the substrate, wherein the conductive film includes a plurality of discrete layers of conductive materials, wherein the discrete layers of conductive materials include ~~comprise~~:
 at least one metallic layer of material selected from one or more groups comprising copper, silver, aluminum, molybdenum, and niobium; and
 at least one barrier layer made substantially of a transition metal nitride material;
 at least one p-type semiconductor absorber layer disposed on the conductive film,
wherein the p-type semiconductor absorber layer includes a copper indium diselenide (CIS)
based alloy material;
 an n-type semiconductor layer disposed on the p-type semiconductor absorber layer,
wherein the p-type semiconductor absorber layer and the n-type semiconductor layer form a p-n
junction; and
 a transparent electrically conductive top contact layer on the n-type semiconductor layer.

54. (Currently Amended) The solar cell of claim 53, wherein the ~~barrier layer~~ transition metal nitride material is selected from one or more groups comprising titanium nitride, zirconium nitride, and hafnium nitride.

55. (Currently Amended) The solar cell of claim 53, wherein the barrier layer comprises substantially of zirconium nitride.

56. (Currently Amended) ~~The solar cell of claim 52~~ A solar cell, comprising:
a substrate;

a conductive film disposed on a surface of the substrate, wherein the conductive film includes a plurality of discrete layers of conductive materials, wherein the discrete layers of conductive materials ~~comprise~~ include:

a first layer of copper;

a second layer of silver; and

a plurality of barrier layers each a transition metal nitride material;

at least one p-type semiconductor absorber layer disposed on the conductive film, wherein the p-type semiconductor absorber layer includes a copper indium diselenide (CIS) based alloy material;

an n-type semiconductor layer disposed on the p-type semiconductor absorber layer, wherein the p-type semiconductor absorber layer and the n-type semiconductor layer form a p-n junction; and

a transparent electrically conductive top contact layer on the n-type semiconductor layer.

57. (Currently Amended) The solar cell of claim ~~53~~ 52, wherein the discrete layers of conductive materials include ~~comprise~~:

a plurality of metallic layers of material each selected from one or more groups comprising copper, silver, aluminum, molybdenum, and niobium; and

a plurality of barrier layers each of a transition metal nitride material.

58. (Original) The solar cell of claim 57, wherein the barrier layers are each selected from one or more groups comprising titanium nitride, zirconium nitride, and hafnium nitride.

59. (Original) The solar cell of claim 57, wherein the barrier layers each comprises zirconium nitride.

60. (Currently Amended) ~~The solar cell of claim 52, further~~ A solar cell comprising:
a substrate;

a conductive film disposed on a surface of the substrate, wherein the conductive film includes a plurality of discrete layers of conductive materials;

at least one p-type semiconductor absorber layer disposed on the conductive film, wherein the p-type semiconductor absorber layer includes a copper indium diselenide (CIS) based alloy material;

an n-type semiconductor layer disposed on the p-type semiconductor absorber layer,
wherein the p-type semiconductor absorber layer and the n-type semiconductor layer form a p-n
junction;

a transparent electrically conductive top contact layer on the n-type semiconductor layer;
and

a layer of metallic material disposed between the p-type semiconductor absorber layer
and the n-type semiconductor layer.

61. (Original) The solar cell of claim 60, wherein the layer of metallic material
comprises zinc.

62. (Currently Amended) The solar cell of claim ~~53~~ 52, wherein the substrate
comprises thin metallic foil.

63. (Original) The solar cell of claim 62, wherein the thin metallic foil is selected
from one or more groups comprising stainless steel, copper, and aluminum.

64. (Currently Amended) The solar cell of claim ~~53~~ 52, wherein the p-type
semiconductor absorber layer has a graded bandgap.

65-80. (Canceled)